

What is claimed is:

1. A performance input apparatus comprising:

a base section;

an operating section displaceable, in response to operation by a human operator, relative to said base section with respect to at least one displacement axis;

a pivot section including a rotary shaft rotatable about a predetermined pivot axis in response to the operation, by the human operator, of said operating section;

a detection section that detects displacement of said operating section, responsive to the operation by the human operator, for at least one parameter selected from a group of parameters including a position, angle, velocity and acceleration, and outputs a detection signal corresponding to the detected parameter;

a reactive force information generation section that generates reactive force information on the basis of the detection signal outputted by said detection section;

a reactive force generation section that imparts a reactive force to said operating section by driving the rotary shaft of said pivot section on the basis of the reactive force information; and

an output section that outputs a control signal responsive to the operation, by the human operator, of said operating section on the basis of the detection signal outputted by said detection section.

2. A performance input apparatus as claimed in claim 1 wherein said output section outputs a control signal for controlling a tone on the basis of the detection signal outputted by said detection section.

3. A performance input apparatus as claimed in claim 1 wherein said operating section is displaceable, in response to operation by the human operator, with respect to a plurality of displacement axes,

said pivot section includes a plurality of rotary shafts corresponding to a plurality of pivot axes provided in corresponding relation to the plurality of displacement axes, and a mechanism that transmits displacement, relative to the plurality of displacement axes, of said operating section to corresponding ones of the rotary shafts,

said reactive force information generation section generates a plurality of pieces of reactive force information in correspondence with the plurality of pivot axes, and

said reactive force generation section includes a plurality of motors provided in corresponding relation to the rotary shafts corresponding to the pivot axes, and said reactive force generation section drives, on the basis of the plurality of pieces of reactive force information corresponding to the pivot axes, corresponding ones of the motors to thereby impart a different reactive forces to said operating section for each of the displacement axis.

4. A performance input apparatus as claimed in claim 3 wherein said detection section detects displacement of said operating section, responsive to the operation by the human operator, for each of the displacement axes,

each of the displacement axes of said operating section is associated with any of a plurality of tone factors, and

said output section generates, in response to the detection signals outputted by said detection section for the displacement axes, a control signal for setting or controlling respective ones of the tone factors.

5. A performance input apparatus as claimed in claim 4 wherein said detection section detects displacement of said operating section responsive to the operation for each of the displacement axes, by detecting displacement of the rotary shaft corresponding to the pivot axle.

6. A performance input apparatus as claimed in claim 4 wherein said detection section detects, for each of the pivot axes, a displacement-related parameter of a type defined independently for the pivot axis.

7. A performance input apparatus as claimed in claim 3 wherein said reactive force generation section drives the motors, provided in corresponding relation to the pivot axes, in such a manner that counter torque is applied, for each of the displacement axes, to the displacement of said operating section produced on the displacement axis, to thereby impart a reactive force to said operating section independently for each of the displacement axes.

8. A performance input apparatus as claimed in claim 3 wherein at least one of the displacement axes is a linear-displacement axis along which said operating section is displaceable linearly, and

said mechanism in said pivot section includes a mechanism that transforms linear movement, along the linear-displacement axis, of said operating section into rotary movement and transmits the rotary movement to the rotary shaft corresponding to the linear-displacement axis.

9. A performance input apparatus as claimed in claim 3 wherein at least one of the displacement axes is a pivotal-displacement axis about which said operating section is pivotally displaceable, and

said mechanism in said pivot section includes a mechanism that

transmits rotary movement, about the pivotal-displacement axis, of said operating section to the rotary shaft corresponding to the pivotal-displacement axis.

10. A performance input apparatus as claimed in claim 1 which is portable, and wherein said operating section is operable by the human operator with said base section held by the human operator.

11. A performance input apparatus as claimed in claim 10 wherein said operating section is operable by the human operator with said base section placed in contact with a ground surface or a surface of a floor or table.

12. A performance input apparatus as claimed in claim 1 wherein said operating section includes an operating arm operable by the human operator, and a multi-axis movement mechanism that allows said operating section to be displaced relative to said base section with respect to a plurality of axes.

13. A performance input apparatus as claimed in claim 12 wherein said base section includes an arm portion extending from said multi-axis movement mechanism in one direction and a free arm extending from said multi-axis movement mechanism in a direction opposite to the one direction, and wherein, in displacing said operating section relative to the arm portion, the human operator can hold the free arm supplementarily.